WHAT IS CLAIMED IS

1. A method of correction of A/D converted output data for correcting digital data obtained by A/D conversion of an analog signal, comprising the steps of:

forming at least a first order approximation polynomial curve approximating an input/output characteristic curve of A/D conversion in a predetermined input range of said analog signal,

setting an ideal input/output characteristic line corresponding to said input/output characteristic curve of A/D conversion in said predetermined input range of said analog signal,

deriving a conversion equation for converting coordinates of a point on said approximation polynomial curve to coordinates of a point on said ideal input/output characteristic line corresponding to the same analog signal value, and

converting said A/D converted digital data by said conversion equation.

2. A method of correction of A/D converted output data as set forth in claim 1, wherein said step of forming said approximation polynominal curve is comprised of a step of dividing a predetermined input range of said analog signal into a plurality of areas and a step of connecting the two ends of said input/output curve in each area to form an approximation line.

3. A method of correction of A/D converted output data as set forth in claim 2, wherein each of said approximation lines in an area including a minimum value and an area including a maximum value in said analog signal input range among said areas is made a line connecting any coordinate point other than the two ends of said input/output characteristic curves in said area and a boundary point with another adjoining area instead of a line connecting said two ends.

4. A method of correction of A/D converted output data as set forth in claim 2, wherein the lengths of the

analog signals in the areas are all the same.

5. A method of correction of A/D converted output data as set forth in claim 1, wherein said step of forming said approximation polynomial curve forms said input/output characteristic curve as an approximation curve expressed by at least a second order and not more than an (M-1) order polynomial based on any M number of coordinates on said input/output characteristic curve.

6. A method of correction of A/D converted output data as set forth in claim 5, wherein said polynomial is a second order equation.

7. A method of correction of A/D converted output data as set forth in claim 6, wherein said second order equation is expressed by the second order function $x=c_0+c_1y+c_2y^2$ where said analog signal is x and said digital data is y, c_0, c_1, and c_2.

8. A method of correction of A/D converted output data as set forth in claim 5, wherein said M number of coordinate points are coordinate points other than the two ends of said analog signal input range.

9. A method of correction of A/D converted output data as set forth in claim 1, wherein said ideal A/D line is set so that the difference between digital data for the minimum value of the analog signal and the digital data for the maximum value of the analog signal in said analog signal input range becomes a preset predetermined bit length.

10. An apparatus for correction of A/D converted output data for correcting digital data obtained inputting an analog signal to an A/D converter, comprising:

a reference signal input unit for inputting a plurality of analog signal values as reference signals to said A/D converter in a predetermined input range of said analog signal,

an approximation polynomial curve forming unit for obtaining at least a first order approximation

polynomial curve for approximating an input/output characteristic curve of said A/D conversion based on reference digital data output from said A/D converter for input of said reference signals,

an ideal input/output characteristic line setting unit for setting an ideal input/output characteristic line corresponding to said input/output characteristic curve of said A/D conversion in said predetermined input range of said analog signal,

a conversion equation deriving unit for deriving a conversion equation for converting coordinates of a point on said approximation polynomial curve to coordinates of a point on said ideal input/output characteristic line corresponding to the same analog signal value, and

a data converting unit for converting digital data output from said A/D converter by said conversion equation.

11. An apparatus for correction of A/D converted output data as set forth in claim 10, wherein said reference signal input unit divides said predetermined input range of said analog signal into a plurality of areas, uses the minimum value and the maximum value of said analog signal in said predetermined range and the values of boundary points of said areas as reference signals, and inputs them to said A/D converter, while said approximation polynomial curve forming unit obtains an approximation line approximating the input/output characteristic curve of said A/D conversion for each area based on said reference digital data obtained for input of said reference signals.

12. An apparatus for correction of A/D converted output data as set forth in claim 11, wherein said reference signal inputting unit uses as said reference signal value instead of the minimum value of said analog signal an analog signal value other than the minimum value of said analog signal smaller than all other

reference signals and uses as said reference signal value instead of the maximum value of said analog signal an analog signal other than the maximum value of said analog signal larger than all other reference signals.

13. An apparatus for correction of A/D converted output data as set forth in claim 11, further comprising a division setting means able to set any number of areas.

14. An apparatus for correction of A/D converted output data as set forth in claim 10, wherein said reference signal input unit inputs M number of analog signal values of a predetermined input range of said analog signal as reference signals to said A/D converter, while said approximation polynomial curve calculating unit obtains an approximation curve expressed by at least a second order and not more than an (M-1) order polynomial approximating the input/output characteristic curve of said A/D conversion based on reference digital data output from said A/D converter.

15. An apparatus for correction of A/D converted output data as set forth in claim 14, wherein said reference signal input unit inputs three analog signal values to said A/D converter as reference signals, while said polynomial deriving unit derives a second order polynomial as said polynomial.

16. An apparatus for correction of A/D converted output data as set forth in claim 14, wherein said reference signal input unit inputs analog signal values other than the minimum value and maximum value in said analog signal input range as said reference signals to said A/D converter.

17. An apparatus for correction of A/D converted output data as set forth in claim 10, formed in a single semiconductor integrated circuit.

18. An apparatus for correction of A/D converted output data as set forth in claim 17, formed in a single semiconductor integrated circuit including also said A/D converter.

19. An apparatus for correction of A/D converted output data as set forth in claim 10, wherein:

said A/D converter is comprised of:

a pulse delay circuit comprised of a plurality of serially connected delay units for outputting a pulse signal delayed by a delay time in accordance with the voltage level of said analog signal and transferring a pulse signal while successively delaying it by the delay times of said delay units and

a detecting means for detecting the number of said delay units which said pulse signal passes through in a preset sampling period and

outputs the detection result of said detecting means as said digital data as an A/D conversion result for said analog signal, and

said data converting means converts digital data from said A/D converter in accordance with said conversion equation.

20. An A/D conversion system comprising:

an A/D converting unit for converting an analog signal to digital data,

a reference signal input unit for inputting a plurality of analog signal values as reference signals to said A/D converting unit in a predetermined input range of said analog signal,

an approximation polynomial curve forming unit for obtaining an approximation polynomial curve for approximating an input/output characteristic curve of said A/D conversion based on reference digital data output from said A/D converting unit for input of said reference signal,

an ideal input/output characteristic line setting unit for setting an ideal input/output characteristic line corresponding to said input/output characteristic curve of said A/D conversion in said predetermined input range of said analog signal,

a conversion equation deriving unit for

deriving a conversion equation for converting coordinates of a point on said approximation polynomial curve to coordinates of a point on said ideal input/output characteristic line corresponding to the same analog signal value, and

a data converting unit for converting digital data output from said A/D converting unit by said conversion equation.